

THE TECH

VOL. XXVIII. No. 33

BOSTON, MASS., MONDAY, DECEMBER 14, 1908

PRICE THREE CENTS

TECHNOLOGY WINS FENCING MEET

Loring and Knox Excel for
Tech—Emerson Excels for
Fenway Fencing Club

SCORE 7-2

First Team Wins Easily But
Second Team Loses Through
Lack of Experience

Last Saturday night the Technology Fencing team won their second match of the season, defeating the Fenway Studio team seven bouts to two. H. G. Knox, U. S. N., 1911, showed the best form of any man on the floor. C. C. Emerson did the best work for the Fenway team. In the eighth match, although Capt. V. C. Grubman 1909, had the most points to his credit, the match was given to Emerson on account of his excellent form. Extra periods were required in the second and sixth bouts.

Although the Tech second team lost, our men put up good fights and when it is considered that P. K. Chinchilla 1909, is the only man who has had any experience the work of the team was excellent.

The summary:—

Goodyear (F) defeated Grubman (T); Knox (T) defeated Emerson (F); Loring (T) defeated Longley (F); Knox (T) defeated Goodyear (F); Grubman (T) defeated Longley (F); Loring (T) defeated Emerson (F); Knox (T) defeated Longley (F); Emerson (F) defeated Grubman (T); Loring (T) defeated Goodyear (F).

Score—Tech 7 bouts, Fenway Studios 2 bouts.

SECOND TEAMS.

Paxton (F) defeated Beers (T); Perera (F) defeated Coppinger (T); Chinchilla (T) defeated Kirkpatrick (F); Coppinger (T) defeated Paxton (F); Kirkpatrick (F) defeated Beers (T); Chinchilla (T) defeated Paxton (F); Perera (F) defeated Beers (T); Kirkpatrick (F) defeated Coppinger (T).

Score—Fenway Studios 6; Tech 3.

CANNIBAL CUSTOMS

Those students who attended the Union entertainment Friday night will long remember the thrilling talk on the Cannibal Islands given by Rev. J. H. Denison, pastor of the Central Congregational Church. About 175 were present and the weird stories, supplemented by interesting lantern slides from photographs, held the attention of the entire audience to the last.

Dr. Denison spent a month on the Island of Pomerania, a part of New Guinea in the South Pacific ocean. He visited the Fiji Islands and spent considerable time in Samoa, Australia, and New Britain. Many of his lantern slides showed the people of the different islands. The decorations of the women, consisting of human bones and skulls, attracted considerable attention. There are no quadrupeds on the islands, except the native kangaroo. In certain sections the men are blood thirsty and still retain the actions of a wild race.

Civilization there has not yet reached the stage but what young girls are bought and sold and are often forced to marry at eight years of age. The money used in such transactions consists of shells strung on a fiber.

Missionary and educational work is being carried on throughout the islands and is accomplishing remarkable results, although on account of the language of these strange people advancement along civilized lines is slow and tedious.

1903 DINNER

About 20 1903 men met at the Union Saturday night for a dinner. J. H. Critchett, 1909, spoke on "Current Events at the Institute."

CO-OPERATION, CLOSER RELATIONSHIPS, CONFIDENCE, THE KEY OF SUCCESS

Acting President Noyes in Annual Report to Corporation
Reviews Development of Institute and
Defines its Immediate Needs

CONDITIONS DEMAND REBUILDING ON NEW SITE

To Maintain Standing Institute must Receive all fit Students—
Impossible under Present Overcrowded Conditions—
Financial Question Serious

POINTS IN PRESIDENT NOYES' REPORT

Technology must receive all capable students wishing to take its courses if it is to maintain its standing among technical schools.

Present overcrowding limits the number admitted; financial aid is needed to relieve the situation.

The Institute has practically reached its limit of development under present conditions, and must be removed to a new site if further expansion is desired.

Success depends on co-operation and close relationship among Corporation, Faculty, Alumni and students.

This year's progress includes organization of five year courses, physical training requirements, increased personal contact of teachers and students and specialization of departmental functions.

Report of the Acting President

To the Members of the Corporation:—

I have the honor to present to you today a report upon the progress of the Institute during the past year and upon its condition at the present time. In the report made last year I had the privilege of placing before you my views as to the educational policy which the Institute should follow and as to the most important problems of development. I shall try to show you what progress has been made in the solution of these problems, and shall bring to your attention certain other matters which seem to deserve especial consideration.

Changes in the Corporation and Faculty

The most important event connected with the membership of the Corporation and Faculty is the recent election of Professor Richard C. MacLaurin, now of Columbia University, to the Presidency of the Institute. By this appointment, this institution is to be placed under the leadership of a man of the highest personal qualities, of an eminent scholar distinguished in two of the most fundamental branches of science taught at the Institute, and of an experienced educator acquainted with the systems of higher education prevailing all over the world and highly sympathetic with our own. Under his guidance, aided as he will be by the most cordial co-operation of Corporation, Faculty, students, and alumni, we may rest assured that the Institute is about to enter upon a new epoch in its history, to be characterized by an unexampled development in all directions, carried out upon sound principles.

The Corporation has welcomed to its membership three new term members, elected from among the nominees of the Alumni Association—Messrs. Arthur T. Bradley, Everett Morss, and James W. Rollins, Jr., all of Boston. Through this election the number of term members attains the maximum of fifteen provided for by the by-laws of the Corporation.

It is with great regret that I have to recall that during the past year the Corporation has suffered the loss of one of its life members, Mr. Charles Lovering, who has been a member of this body since 1896. A memorial of his life, prepared by a colleague on this board who was well acquainted with his work, was published in a recent number of the Technology Review, which was sent to all members of the Corporation.

During the past year there have been, I am glad to say, no changes in the Faculty brought about through resignation or death. Its membership, has, moreover, been increased by the promotion of eight members of the Institute staff, whose successful work as instructors has shown them to be well worthy of this honorable recognition. These newly appointed members are: Charles W. Berry, Assistant Professor of Mechanical Drawing; Arthur A. Blanchard, Assistant Professor of Inorganic Chemistry; Harry C. Bradley, Assistant Professor of Drawing and Descriptive Geometry; Harrison W. Hayward, Assistant Professor of Applied Mechanics; Ervin Kenison, Assistant Professor of Drawing and Descriptive Geometry; Joseph C. Riley, Assistant Professor of Mechanical Engineering; Hervey W. Shimer, Assistant Professor of Paleontology; and Alpheus G. Woodman, Assistant Professor of Food Analysis. Dr. Gilbert N. Lewis, who during the past year has acted as Director of the Research Laboratory of Physical Chemistry, has been advanced to the grade of Associate Professor of Physico-Chemical Research.

Upon Professor Robert H. Richards the degree of Doctor of Laws has been conferred by the University of Missouri, in recognition of the distinguished services rendered by him in promoting the science and practice of mining engineering. A similar honor was conferred upon Professor George F. Swain a little more than a year ago by the University of New York, in recognition of his expert knowledge and high accomplishment in the field of civil engineering.

Faculty and Department Organization

By the new appointments just referred to, the Faculty becomes a body of ninety-two members. In spite of its large size, its work is carried on effectively through the agency of a large number of standing committees. The character of this organization and its satisfactory working were described in my former report. Improvements in it are, nevertheless, frequently discussed by the Faculty. At the present time there is an especially important question of this kind under consideration by the Committee on Faculty Business—that of appointing a new standing committee of the Faculty on each of the thirteen Courses of Study to take the initiative in recommending changes in the curriculum.

(Continued on page 3.)

TECHNOLOGY WINS FROM DARTMOUTH

Wentworth, Parker and Lord
Excel for Tech—Avery and
Hedge for Dartmouth

SCORE 26-22

Tech Takes Big Lead in First Half
But Dartmouth Braces in
Final Minutes of Play

In the first basketball game of the season the Institute won from Dartmouth at Hanover, by the score of 26-22. The game was replete with brilliant individual work by both sides, team work being less in evidence. Capt. P. M. Wentworth 1909, did the best work for Technology.

During the first half he shot six goals from fouls and in the second, two fine goals from the floor. T. B. Parker 1911, and C. R. Lloyd 1912, also did excellent work for Tech. Parker scoring eight points and Lloyd scoring six points.

Avery played the star game for Dartmouth. He managed to hold Hargrave to one goal from the floor and made one himself. If it had not been for his magnificent work on the defense Tech's victory would have been more decisive. Capt. Hedge, of Dartmouth, put up a fine game in the second half.

The summary:—

TECH—26. DARTMOUTH—22.
Wentworth, r.g. L.F. Brady
Bemis, l.g. r.f. Buck
Parker, c. c. Gibson, Hedge
Hargrave, r.f. l.g. Avery
Lloyd, l.f. r.g. Mullin

Score—Technology, 26; Dartmouth 22.
Goals from floor—Wentworth, 2; Parker, 4; Hargrave, Lord, 3; Brady, 2.
Fouls—Wentworth, 6; Brady, 2. Referee—Farley, Cushing Academy. Timers—Pearl (T); Reddy (D). Time—20-min. halves. Attendance 400.

NEW ALMA MATER SONG

Last Friday evening the musical clubs gave a concert at the Newtowne Club Hall in Cambridge. The work of the Glee and Mandolin Clubs was excellent, the Glee Club showing a great improvement over its former work. The feature of the evening was the singing of the new Tech song, written by Clifton W. Kyle 1909, the leader of the Glee Club. It was the last piece on the program and it was received with great enthusiasm by the assembled guests, numbering over a hundred and fifty.

The piece, entitled "Alma Mater, Technology," will be sung at the winter concert and this will be the first chance for Tech men to hear this new song.

CALENDAR

MONDAY, DEC. 14.

- 1 P. M.—1911 meeting in Huntington Hall.
- 7 P. M.—Musical clubs meet at Trinity Place.
- 8 P. M.—Reception at Church of the Messiah, 81 St. Stevens Street.

TUESDAY, DEC. 15.

- 1 P. M.—Meeting of battalion officers in Room A, at the Union.
- 4 P. M.—Convocation.
- 6:30 P. M.—British Empire Association at Hotel Marlborough.
- 8 P. M.—American Society of Electrical Engineers at 39 Boylston Street.
- 8 P. M.—Catholic Club in 16 Rogers.

NOTICE

C. E. SOCIETY—The next meeting of the Civil Engineering Society will be held in 11 Eng. B. Wednesday, at 4:15 P. M.

CONVOCATION TOMORROW AT 4.00 P. M.

THE TECH

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Editorial Staff.

H. I. PEARL 1910 Editor-in-Chief
E. H. RANGER 1911 Managing Editor
W. D. GREEN 1909

Monday, December 14, 1908.

A reading of the report of the acting-president shows at a glance that while the needs and problems which the Institute faces are as pressing and immediate as they were a year ago, they are much nearer solution. A spirit of confidence in the ability of the Corporation, Faculty and Alumni seems to run through the whole document. Heretofore, the questions dealt with have been ones which should be solved; now they are questions which must and will be solved. While the Institute is cramped for room, its men and its apparatus and equipment are the best to be had, and in spite of admittedly serious overcrowding, the results obtained are highly gratifying.

PORTFOLIO COMMITTEE

On account of the small number present at the 1909 class meeting, it was decided to put the question of backing up the portfolio committee financially to the vote of the class on the portfolio committee ballots. The question is divided into two parts; first, shall the class oblige the men whom it elected to this committee to bear the financial burden, and, second, in case the class should stand behind the committee, shall the contracts made be subject to the approval of the executive committee of the class?

PROM BALLOTS MAILED

Ballots for the Junior Prom Committee election were mailed this morning to all members of 1910. The polls will close at the Cage Thursday, at 4 o'clock. The regular dinner of the class has been indefinitely postponed, and the results of the election will be announced in The Tech.

The committee in charge of the election is W. H. Duffield, P. D. Terry, and J. H. Ruckman. Four men are to be chosen from the following list of nominees:—B. Reynolds, T. A. Roper, E. B. Wood, R. M. Torrey, M. D. Price, L. N. Adder, L. O. French, J. S. Sneddon, Van Court Warren, John Avery, Jr., W. J. Orchard, A. L. Fabens, T. B. Whittemore, R. S. Breyer, W. S. Cleverdon, A. A. Gould, R. D. Wells, R. C. Jacobs, and P. Hart.

MACLAURIN SPEAKS

President-elect Maclaurin was the principal speaker at the annual dinner of the Brooklyn Engineers' Club, held last Thursday night. The retiring president of the club was G. C. Whipple 1889. A large number of Tech men were present, many of whom are members of the club, but some of whom came from out-of-town places for the special purpose of meeting and hearing Dr. Maclaurin.

There was naturally great enthusiasm when he arose to speak, everyone present springing to his feet, and joining in an M. I. T. cheer, ending in Dr. Maclaurin's name.

ORCHESTRA

During the past ten days a number of informal meetings have been held by a few men interested in forming a student orchestra. The first of the week, a few old players got together and partially organized, and since then men from all the classes have expressed their desire to try for positions. Technology has not had a regulation orchestra for three years, but if the support is forthcoming present conditions indicate that the Institute will have a first-class orchestra this year.

The old men backing the movement are:—A. F. Thode, D. Belcher, S. L. Furgher, L. C. Shaw, A. Cook. Some of the new men out are M. K. Sweet, W. N. Drew, A. M. Eisenberg. A practice meeting was held Saturday afternoon in the living room of the Union with very encouraging results.

CATHOLIC CLUB

Mr. David Goldstein will address the Catholic Club Tuesday evening at 8 P. M., on "Socialism—a Menace to Society." The meeting will be held in 16 Rogers, instead of 11 Pierce, and it is hoped that all members will be present since final discussion of the dance will take place. All interested in Socialism are welcome to hear the talk.

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27-31

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SPECIAL INDIVIDUAL, Manager

ACTING PRES. NOYES REPORT

(Continued from page 1.)

culum of the Course. This initiative has previously rested almost wholly within the single department most closely associated with the Course; but the composite character of our Courses seems to make desirable the closer participation of several departments in the matter; thus, to cite a rather extreme example, the Course in Mining Engineering and Metallurgy includes, in not very far from equal proportions, studies in these two subjects, in chemistry, in geology, and in mechanical engineering; and a well balanced course schedule can probably be best worked out through the joint co-operation of all the departments concerned. The same is true in greater or less degree of almost all our other Courses. Another important result that would be secured by this plan is a larger influence and participation in Faculty Department affairs of professors who are not in charge of departments.

This last consideration is one of great importance not only because of the direct value of the advice and opinions of these men, but also because it is essential to give to them positions of as much influence and responsibility as possible, if teachers and scientists of the first rank are to be secured and retained in our departments. To this end and also for the purpose of increasing the efficiency of our administrative system, I believe it is desirable that the formal organization of our departments—at any rate of the larger and more composite ones—be carried one step further and that there be definitely appointed, upon recommendation of the professor in charge of the department, other professors to take charge of the larger branches of instruction; for example, within the civil engineering department individual professors might be placed in charge of the instruction in structural, hydraulic, railway, and topographical engineering, respectively. As their titles would indicate, such men should deal with the distinctively educational aspects of the work of instruction entrusted to them, and should be held personally responsible for its success. To make such responsibility effective, they should be given the privilege of submitting to the President and Executive Committee, through the professor in charge of the department, recommendations as to the promotion and salaries of their own subordinates.

It is also, I believe, desirable that there be established a more definite system of promotion and salary-payments applicable to all the departments of the Institute. This seems important from many points of view—as a relief to the President and heads of departments in deciding many vexatious personal questions, as a means of securing uniformity of treatment throughout the Institute, and as an aid in improving the character of our staff.

The Registration of Students

The number of students now registered at the Institute is 1461, an increase of 51 over the number attending at the same time last year. This is mainly accounted for by the fact that the first-year class contains 57 more students than it did a year ago, while the three higher classes, taken together, include about the same number of students as last year.

This large increase again raises the much discussed question whether a limitation should be placed upon the number of our students. Upon this matter my own opinion is that it should be the experimental policy of the Institute to receive and provide for all those capable and well prepared students who desire to avail themselves of the opportunities it offers; for only in this way can it attain its full measure of usefulness. It should not be deterred by the educational difficulties involved in the instruction of large numbers of students. The Institute is already a large school; and, if it continues to hold the first place among institutions of its kind, it will inevitably become still larger; for it is not justifiable to raise the standard to the point of demanding extraordinary scholarly attainment, since other qualities than scholarship play an important part in determining the success of a professional or scientific career. The Faculty and staff of instruction must therefore face resolutely the problem of teaching large classes effectively; administrative officers must see that the character and organization of the staff is such as is adapted to this end; and the Corporation and Alumni must aim to secure the resources which will provide sufficient facilities in the way of class-rooms, laboratories, and equipment,

and will make possible the payment of adequate salaries, such as will retain efficient teachers.

This last factor—the financial resources of the institution—is, however, the crucial one in deciding at any given time the question of numbers. While I have expressed the opinion that, looking to the future, our general policy should be to provide for any natural growth of the institution, I wish to emphasize even more strongly the idea that, for the present, until additional accommodations have been provided and until increased funds for this purpose and for current expenses have been secured, it would be a serious mistake to permit the number of students to increase much beyond the present registration; for it would mean that the effectiveness of our teaching would be much impaired. The quality of our work is the first consideration; and the quantity of it must be increased, whether through growth in the size of our classes or through provision for new lines of instruction, only when the funds available are sufficient to enable it to be done without detriment to the work already in progress. Regrettable as it may be from some points of view, it is therefore, I believe, imperative that the Faculty take measures to prevent any further increase in the number of first and second year students through a more rigorous enforcement of scholarship requirements.

The number of new students who have previously attended other colleges has again shown a substantial increase—from 155 last year to 170 this year. Of these students 16 per cent. enter the first year, 28 per cent. the second year, 46 per cent. the third year, and 9 per cent. the fourth year of our undergraduate courses. Of the 230 candidates who received the degree of Bachelor of Science last June, 18 per cent. had previously graduated at some other college, and 14 per cent. more had attended some other institution of collegiate grade for one or more years. There is also a notable increase (from 20 last year to 29 this year) in the number of students pursuing advanced work for the degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering.

The proportion of Massachusetts students (57.5 per cent.) has somewhat increased over that of last year (55.5 per cent.).

Other interesting statistical information will be found in the report of the Registrar.

Advanced Course of Study

From the standpoint of our general system of instruction the two most important developments of the past year have been the much fuller provision made for advanced courses of study leading to the higher degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering, and the more definite organization of five-year undergraduate courses leading to the Bachelor's degree. The former courses have been developed by the Faculty along the lines referred to in my last report; and a Bulletin entitled "Advanced Study and Research" has been issued by the Institute, in which these courses are fully described. As this Bulletin has been sent to members of the Corporation, I shall not discuss these advanced courses further.

I wish, however, to call your attention to the new five-year undergraduate courses which have been arranged for. The Faculty has taken this action, in order that students who can afford to spend an additional year may realize that it is highly important to do so, if they wish to secure in full measure the advantages of the combination of liberal education, scientific training, and professional knowledge which the Institute offers.

These courses are of three types. In one of these the student supplements all the required work of one of the regular four-year-courses with the equivalent of an extra year of study in language, literature, fine arts, history, economics, and in the fundamental sciences, chemistry, physics, astronomy, geology, and biology. These additional general studies are entirely elective. This plan of study thus provides in large measure for the breadth of scholarship which a college course is designed to supply; but it does this by the methods and in the atmosphere of the scientific school and special emphasis upon general scientific studies as a part of a liberal education. Upon students who complete such a Course is conferred the degree of Bachelor of Science in two departments of study, namely, in General Science, and in the branch of engineering in which the professional work has been completed.

The range of such elective studies of a liberal character which the Institute offers to its students is an extended one; and only in one direction does this side of our work seem to need strengthening. We have, unfortunately, no courses of lectures on philosophy, psychology, and ethics; and I would again bring to your attention the desirability of having a professorship of these important subjects established at the Institute, either through a special endowment or through direct provision for the necessary salary payments through a period of years.

A second type of five-year course makes provision for those students who desire to secure a training in two allied branches of science or engineering, as in electrical and mechanical engineering, mechanical and chemical engineering, mining engineering and geology, etc. Such a combination of knowledge and training is so often required in professional practice that the student who has received it has exceptional opportunities open to him. For the completion of such a Course, the degree of Bachelor of Science in two professional departments of study is awarded.

In a third type of five-year course, provision is made for distributing the work of the last three years of the regular four-year courses over four years without additional requirements, thus reducing the number of subjects required in any term. This arrangement affords the opportunity for more thorough work in each subject by enabling a student to devote more time to outside study and to practice in the laboratories, drawing-rooms, and in the field; and it enables regular standing to be maintained by the slow, thoughtful student, who, though able to understand and perform our work satisfactorily, finds it difficult to do it properly at the rate and under the pressure which our four-year schedules involve.

Requirement of Physical Training

Of the more specific changes that have been made in the courses of instruction the most important is the introduction, upon the recommendation of the Dean, of the requirement that all first-year students attend a course of four lectures on personal hygiene, have the usual anthropometric measurements made upon them at the beginning and at the end of the school year, and take regular exercise in the gymnasium classes or upon the athletic teams throughout a large part of the year. A circular prepared for the use of students in regard to this subject has recently been sent to members of the Corporation for their information. The chief purpose of this requirement, which thus far has worked very satisfactorily, is to impress upon students the necessity of close attention to their health and the importance of physical exercise as a means of maintaining it.

Closer Relations Between Instructors and Students

I am glad to be able to state that a gift received from an anonymous friend has made it possible to extend the plan of individual conferences between the instructors in charge of sections and their students, which was last year provided for in the subjects of first-year English and mathematics, to second-year physics, which is one of our most fundamental subjects and one with which students have much difficulty.

The establishment of close personal relations between instructors and students is a matter of prime importance to the success of the work of instruction. Through the fact that an unusual proportion of our subjects are taught upon the recitation plan to small sections or in the laboratory to individuals rather than by formal lectures to large classes. Such relations are already developed at the Institute in a greater degree than at most other large educational institutions. The plan of conferences just referred to supplements the recitation system in a most valuable way. I believe, however, that there exists in some of our important first and second year subjects a further opportunity for accomplishing much in this direction through a different organization of the work. Instead of having, as is now done in some cases, a group of instructors teach in common in the laboratory or drawing-room a whole class of from three to four hundred students, while another group carries on the class-room work in the same subject, and perhaps a third group corrects the written work submitted, much better results would, I am sure, be attained by placing each instructor in full charge of a limited number of students, say sixty or eighty, and having him, with the aid of an assist-

ant when necessary, carry on with those students all the different sides of the work in the subject in question (except the course of experimental lectures, which it is especially uneconomical to repeat). He would thus not only get much more closely acquainted with his students and come to understand their individual difficulties, but he would feel a personal responsibility and pride in the success of those entrusted to him. He has, moreover, a greater variety of work, and avoids the monotony of an undue number of repetitions of the same exercise with a large number of sections. Professor A. E. Burton has called attention in his report submitted herewith upon the Department of Drawing and Descriptive Geometry to the importance of making such a change in the method of instruction in these subjects; and it would, I believe, be equally advantageous in such subjects as chemistry and physics, in which the instruction consists of a combination of lecture, recitation, laboratory, and problem work. The present method of giving such instruction to large classes has grown up in the larger colleges as a result of an assumed need of economy in this direction; for there is some economy of effort in the division of labor between the different sides of a teacher's work, and there is a large economy in the average salary paid when one professor is employed to supervise and to give lectures, and inexperienced or otherwise inefficient instructors and assistants are engaged to do the real teaching. From an educational point of view, however, the method is unsatisfactory; until it is abandoned, the problem of handling large classes will not be adequately solved and large colleges will be at a disadvantage in comparison with small ones. Moreover, though the other plan of individual responsibility involves additional expense, the amount required is not inordinate; for the main work of instruction might well be done by men of intermediate grades receiving (according to their length of service) from \$1000 to \$1800 a year. And it would, I believe, be better to curtail expenditures in almost any other direction than in this one, which is so essential to the efficiency of the teaching of our fundamental subjects.

Requirement of Summer Work

In my previous report I called attention to the important advantages which would result from the transfer to a summer period of some of the required work in the field, laboratory, and drawing-room, as well as to some of the difficulties involved. A committee of the Faculty has studied this matter and has prepared for the consideration of the Faculty a plan providing for the requirement of three and one-half weeks of work in the month of June by all students between the first and the second years. The work included in this summer period would consist of surveying in all those Courses of Study which have this subject, of mechanic arts and descriptive geometry in certain other Courses, and of chemical laboratory in certain others. The time set free in the school year it is proposed to utilize for the introduction, not of any new subjects, but of additional recitations and preparation time into the general courses in chemistry, physics, and English composition, literature, and history. For the transfer of surveying to the summer there are strong reasons of a special character which have been fully set forth by Professor Swain in his reports upon the Civil Engineering Department both this year and in previous years. Professor Swain submits in this year's report a detailed plan for a surveying summer camp to which I would call your attention.

New Subjects of Instruction

A few important subjects of instruction are offered to undergraduates as new optional studies for the first time this year. A series of informal talks upon German life and institutions is being given in the German language by Dr. Hermann Schumacher, who has come to the Institute this term from the Royal Gymnasium of Cologne under the auspices of the Carnegie Foundation for the Advancement of Teaching. A course of lectures on Cosmic Physics, presenting the broad aspects of this subject and the recent advances in it, is to be given to our students through the kindness of Professor Percival Lowell. During the present year the instruction in economic geology has been placed under the charge of Dr. Waldemar Lindgren, an eminent expert in that subject from the United States Geological Survey. A new option upon the subject of steam turbine engineering has been introduced into the Course of Mechanical Engineer-

ing upon the initiative and under the direction of Professor C. H. Peabody. In addition, new courses for advanced students are offered in many of the departments.

A New Research Laboratory

Through the liberality of a member of the Corporation it has been possible to make definite provision for the important extension of our advanced instruction and research work to the industrial applications of chemistry. By the establishment at the beginning of this year of the new Research Laboratory of Applied Chemistry as a division of the Chemical Department, special opportunities are offered for the execution, by salaried research assistants and by advanced students, of investigations of chemical problems of interest to the manufacturer. In a report submitted herewith, the Director of the Laboratory, Professor W. H. Walker, describes more fully its present work and its future prospects of development.

Development of the Buildings and Equipment

Some important additions have been made during the past summer to our laboratories and equipment.

Greatly needed space has been provided for the Laboratory of Steam Engineering by extending it into the old lunch room in the Pierce Building; and there has been installed in it a 500-kilowatt steam turbine, together with a condenser, pumps, and other accessories.

In the boiler and power plant there have been installed two new boilers, furnished at a greatly reduced price by the Babcock and Wilcox Boiler Company, for which assistance the Institute wishes to express its great indebtedness. The whole plant has, moreover, been rearranged and modernized under the direction of Professor E. F. Miller; and it is largely in consequence of his experience, good judgment, and devotion to the undertaking that the Institute now possesses a model plant which will serve not merely to furnish heat, light, and power to its buildings, but will enable its students to study in a more practical way the problems of steam engineering.

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The Department of Economics has also received a most important addition to its equipment through the generous gift to the Institute of the private library of General Francis A. Walker, by his widow, Mrs. Exene Walker. This library consists of about 1500 volumes on economics, many of which are very rare and valuable. In appreciation of this gift and in further recognition of the distinguished services of our former president to this institution and to this branch of science, the Executive Committee has voted that the name Francis A. Walker Library of Economics be attached to the whole collection of works upon this subject possessed by the Institute.

Need of A New Site

In speaking of our buildings and equipment, I must not fail to emphasize the seriously crowded condition of our present quarters, even though it be a time-worn topic of college presidents. I wish specifically to call your attention to the following facts:—our limited space makes impossible any increase in the number of our students; it prevents development of our present work in any new direction, however desirable it may be; it prevents, through lack of classrooms, an extension of the plan of instruction in small sections, which as I have stated is so essential to efficient teaching; it involves (most strikingly in the case of the Chemical Department) a separation of different divisions of the departments, thus hindering a close association of the different instructors and proper correlation of their work; it makes necessary a crowding of students and apparatus in our laboratories which makes thoughtful and reliable work difficult; and it gives no opportunity for providing our instructing staff with adequate offices and private laboratories in which writing, calculations, and in-

vestigations can be properly carried on.

Though the physical condition of the Institute is, as I have indicated, one that makes impossible further growth or a development of its work in new directions, and one that does in some measure impair the efficiency of our present instruction, yet I should be sorry to give you the impression that the latter effect is of a very serious character. On the contrary, there has, I believe, never been a time when our teaching was so thorough or our system of education so generally effective; and this results from the fact that limitation of space is, after all, only a secondary factor in the whole problem. Equipment for lecture and laboratory work is another physical factor of at least equal significance; and on this side the Institute, taken as a whole, is extraordinarily well provided for. Far more important than either of these are, moreover, the character of the teacher, the spirit of the student, and methods of instruction and the standards of scholarship and ideals of the institution; and in all these respects the Institute is steadily advancing.

Nevertheless, while recognizing the more vital importance of these considerations we must not permit our growth and development to be hampered by inadequate accommodations and unsuitable physical surroundings. The situation is, moreover, one that requires radical treatment; for the condition referred to is one which prevails throughout the whole Institute, and not merely in a few departments. In this respect our position is different from that of those universities which have developed upon the plan of making ample and permanent provisions for one department every few years, instead of making during the same period such provision as might be possible for all departments of the institution. Since time is a highly important factor in determining the growth and reputation of institutions and the value of the service which they render, I believe the plan of continuous all-sided development which we have followed was the wisest; but it should be realized that we are now facing the logical result of that plan, which has made it imperative that the whole Institute be now rebuilt upon a permanent basis and upon a new site better adapted to its needs. Though no definite action in this direction has been taken by your body, or by the Committee on the Site which you have appointed, yet I believe that, during the past year, through informal discussion and individual consideration of the matter, there has grown up not only among your own members but among all the other groups of men connected with the Institute,—the faculty, alumni, and undergraduate,—a sentiment so strong that it will be satisfied with nothing less than the creation of a new Institute on a new site. It has also, I believe, come to be recognized that the securing by private subscription of a moderate sum of money is an essential preliminary to the serious discussion of any plan of rebuilding and removal. This feeling was expressed by the action taken at the last stated meeting of the Corporation requesting the Committee on the Site to act also as a committee for obtaining funds for the development of the Institute. In my own opinion, this is not a matter that should be left to the initiative of the President or of other individuals. It can be adequately accomplished only through a well organized effort carried on jointly by representatives of the Corporation and Alumni.

Developments in the Conditions of Student Life

Through the opening of the new Technology Union in the building erected on Trinity Place during the past summer, a most important step has been taken in the development of the social life of our students.

The new Union was made possible mainly through the interest and efforts of the Committee on the Welfare of Students appointed by the Corporation last March, and through the generous donations of individual members of this body, which provided for a large part of the expense involved. That this assistance is highly appreciated by the students is shown by the following resolution which I present to you with much pleasure at the request of the Institute Committee, which is a large committee thoroughly representative of the whole student body:

"Whereas a new and magnificent Union has been provided for the use of the students of the Massachusetts Institute of Technology through the efforts of the Committee on Student Welfare of the Corporation and through the gifts of members of the Corporation and Alumni, and

Whereas, The management of this Union has been largely vested in the hands of the students, be it

RESOLVED by the student body of this institution that their heartfelt gratitude be extended to the said Committee and all others through whose generosity this important development of student life has been made possible, and be it also

RESOLVED that the students by their use of the Union will at all times demonstrate this appreciation, and be it further

RESOLVED that a copy of these resolutions be sent to the members of the Committee on Student Welfare of the Corporation, and to all other members of the Corporation and Alumni who have contributed funds for the erection and equipment of the Union."

The Union serves the purposes both of a club house and of a general eating place for students. On the first floor there is a large dining room, in which students who desire to do so may get all their meals, both week-days and Sundays; the kitchen being in the adjoining basement of the Pierce Building. On the second floor there is a smaller dining room available for the meeting of student societies; and a large social or living room, where students may gather in their spare time for reading and conversation and where evening entertainments may be held; also a small room known as the quiet room. In the mezzanine part, a coat room and students' post office, a lavatory, and three small rooms for offices for student organizations are provided. In an adjoining room is the office of The Tech, the students' newspaper.

The control of the Union has been placed in charge of a Committee of nine members, of whom a majority are undergraduate students elected by the Institute Committee. There have also been elected by the students three subcommittees to take charge of different sides of the Union's activities, namely, a House Committee, a Dining Room Committee, and an Entertainment Committee. The latter of these committees has arranged for the holding of lectures or musical or other entertainments regularly on every Friday evening.

The Point System

The admirable spirit of our students, manifested not only in connection with this Union, but in many other ways, is, I believe, one which can be matched at few, if any, other colleges. I can not refrain from mentioning to you a striking illustration of this. The Institute Committee has recently recommended, and the student-body put into practice, a plan known as the "point-system," which has been introduced in only one or two other colleges. The purpose of this plan is to restrict the number of different offices in the various student organizations which one individual may hold. To each office a certain number of "points" is attached, and no student can hold positions corresponding to more than a specified maximum of points. This hinders a few aggressive individuals from monopolizing the direction of student activities, whereby their own scholarship is sacrificed and the desirable participation in more moderate measure of a larger number of students is prevented.

The Development of Closer Relations

In order to enable the Institute to fulfill more effectively its educational mission, a determined effort must be made to establish closer relations with and among the different organizations

and groups of individuals that are in any way associated with the work of the Institute. While its success will, of course, depend primarily upon the character of the education it affords and upon the contributions to scientific progress it makes; yet no institution of learning, and least of all a school of applied science, can afford to become in any degree isolated. I believe that insufficient attention to this matter during the past ten years has been a serious obstacle in the way of our progress; and that there is no more important task before us in the immediate future than that of remedying this defect.

First of all, there should be close co-operation between the different groups within the Institute itself, this Corporation, its Executive and other Committees, the Alumni, the Faculty and instructors, and the undergraduates. There should be full discussion of new questions as they arise, not merely by the body which may have the final decision, but by all others who have any natural interest in them. The carrying on of an educational institution is in its very essence a co-operative undertaking; and full publicity and free discussion of its affairs is one of the prime conditions of its success.

As suggested in my previous report, members of this Corporation can, I believe, render great assistance to the Institute through a more direct participation in its work. This may be done in the case of such matters as specific improvements in the courses and methods of instruction, in the conditions of student life, in the equipment of the departments—in the case of any special matter in which a member may take a personal interest—through individual co-operation with the President, Dean, and professors in charge of departments. For the consideration of larger questions, the appointment of special committees seems the best method, members of the Faculty or Alumni who are especially interested in the matter under consideration being invited to attend. The Committee on the Promotion of Welfare of Students appointed by the Corporation at the March meeting has furnished a striking illustration of the effectiveness of this plan. To the interest and activity of that Committee, which had the benefit of the co-operation of the Dean, Bursar, and representatives of the alumni and student body, the establishment of the Technology Union is, as I have already stated, largely due.

It is also important that close relations be maintained between the students and the administrative officers of the Corporation and Faculty, so that the former's needs and interests may be well understood, their points of view appreciated, and their co-operation in promoting the aims of the Institute secured. Few greater mistakes could be made than that of failing to enlist the direct interest and support of the students in the solution of the general and educational problems which confront us. This has been made easier through the reorganization during the past year of the Institute Committee, by which it is made thoroughly representative of the student-body, as well as by the closer contact between students and administrative officers which the Technology Union has brought about. The President and Dean have also been greatly aided on this side by the appointment made last year by the Executive Committee of Mr. H. A. Rapelye of the class of 1908 to the new position of President's Assistant. His intimate knowledge of our student life has enabled him to advise and assist us effectively in many ways. He has among other things taken an important part in the arrangements connected with the new Technology Union, and is now organizing a Student Employment Office, through which this important work may be more effectively handled.

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BOSTON, MASSACHUSETTS

ACTING PRES. NOYES REPORT

(Continued from page 1.)

culum of the Course. This initiative has previously rested almost wholly within the single department most closely associated with the Course; but the composite character of our Courses seems to make desirable the closer participation of several departments in the matter; thus, to cite a rather extreme example, the Course in Mining Engineering and Metallurgy includes, in not very far from equal proportions, studies in these two subjects, in chemistry, in geology, and in mechanical engineering; and a well balanced course schedule can probably be best worked out through the joint co-operation of all the departments concerned. The same is true in greater or less degree of almost all our other Courses. Another important result that would be secured by this plan is a larger influence and participation in Faculty Department affairs of professors who are not in charge of departments.

This last consideration is one of great importance not only because of the direct value of the advice and opinions of these men, but also because it is essential to give to them positions of as much influence and responsibility as possible, if teachers and scientists of the first rank are to be secured and retained in our departments. To this end and also for the purpose of increasing the efficiency of our administrative system, I believe it is desirable that the formal organization of our departments—at any rate of the larger and more composite ones—be carried one step further and that there be definitely appointed, upon recommendation of the professor in charge of the department, other professors to take charge of the larger branches of instruction; for example, within the civil engineering department individual professors might be placed in charge of the instruction in structural, hydraulic, railway, and topographical engineering, respectively. As their titles would indicate, such men should deal with the distinctively educational aspects of the work of instruction intrusted to them, and should be held personally responsible for its success. To make such responsibility effective, they should be given the privilege of submitting to the President and Executive Committee, through the professor in charge of the department, recommendations as to the promotion and salaries of their own subordinates.

It is also, I believe, desirable that there be established a more definite system of promotion and salary-payments applicable to all the departments of the Institute. This seems important from many points of view—as a relief to the President and heads of departments in deciding many vexatious personal questions, as a means of securing uniformity of treatment throughout the Institute, and as an aid in improving the character of our staff.

The Registration of Students

The number of students now registered at the Institute is 1461, an increase of 51 over the number attending at the same time last year. This is mainly accounted for by the fact that the first-year class contains 57 more students than it did a year ago, while the three higher classes, taken together, include about the same number of students as last year.

This large increase again raises the much discussed question whether a limitation should be placed upon the number of our students. Upon this matter my own opinion is that it should be the experimental policy of the Institute to receive and provide for all those capable and well prepared students who desire to avail themselves of the opportunities it offers; for only in this way can it attain its full measure of usefulness. It should not be deterred by the educational difficulties involved in the instruction of large numbers of students. The Institute is already a large school; and, if it continues to hold the first place among institutions of its kind, it will inevitably become still larger; for it is not justifiable to raise the standard to the point of demanding extraordinary scholarly attainment, since other qualities than scholarship play an important part in determining the success of a professional or scientific career. The Faculty and staff of instruction must therefore face resolutely the problem of teaching large classes effectively; administrative officers must see that the character and organization of the staff is such as is adapted to this end; and the Corporation and Alumni must aim to secure the resources which will provide sufficient facilities in the way of class-rooms, laboratories, and equipment,

and will make possible the payment of adequate salaries, such as will retain efficient teachers.

This last factor—the financial resources of the institution—is, however, the crucial one in deciding at any given time the question of numbers. While I have expressed the opinion that, looking to the future, our general policy should be to provide for any natural growth of the institution, I wish to emphasize even more strongly the idea that, for the present, until additional accommodations have been provided and until increased funds for this purpose and for current expenses have been secured, it would be a serious mistake to permit the number of students to increase much beyond the present registration; for it would mean that the effectiveness of our teaching would be much impaired. The quality of our work is the first consideration; and the quantity of it must be increased, whether through growth in the size of our classes or through provision for new lines of instruction, only when the funds available are sufficient to enable it to be done without detriment to the work already in progress. Regrettable as it may be from some points of view, it is therefore, I believe, imperative that the Faculty take measures to prevent any further increase in the number of first and second year students through a more rigorous enforcement of scholarship requirements.

The number of new students who have previously attended other colleges has again shown a substantial increase—from 155 last year to 170 this year. Of these students 16 per cent. enter the first year, 28 per cent. the second year, 46 per cent. the third year, and 9 per cent. the fourth year of our undergraduate courses. Of the 230 candidates who received the degree of Bachelor of Science last June, 18 per cent. had previously graduated at some other college, and 14 per cent. more had attended some other institution of collegiate grade for one or more years. There is also a notable increase (from 20 last year to 29 this year) in the number of students pursuing advanced work for the degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering.

The proportion of Massachusetts students (57.5 per cent.) has somewhat increased over that of last year (55.5 per cent.).

Other interesting statistical information will be found in the report of the Registrar.

Advanced Course of Study

From the standpoint of our general system of instruction the two most important developments of the past year have been the much fuller provision made for advanced courses of study leading to the higher degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering, and the more definite organization of five-year undergraduate courses leading to the Bachelor's degree. The former courses have been developed by the Faculty along the lines referred to in my last report; and a Bulletin entitled "Advanced Study and Research" has been issued by the Institute, in which these courses are fully described. As this Bulletin has been sent to members of the Corporation, I shall not discuss these advanced courses further.

I wish, however, to call your attention to the new five-year undergraduate courses which have been arranged for. The Faculty has taken this action, in order that students who can afford to spend an additional year may realize that it is highly important to do so, if they wish to secure in full measure the advantages of the combination of liberal education, scientific training, and professional knowledge which the Institute offers.

These courses are of three types. In one of these the student supplements all the required work of one of the regular four-year courses with the equivalent of an extra year of study in language, literature, fine arts, history, economics, and in the fundamental sciences, chemistry, physics, astronomy, geology, and biology. These additional general studies are entirely elective. This plan of study thus provides in large measure for the breadth of scholarship which a college course is designed to supply; but it does this by the methods and in the atmosphere of the scientific school and special emphasis upon general scientific studies as a part of a liberal education. Upon students who complete such a Course is conferred the degree of Bachelor of Science in two departments of study, namely, in General Science, and in the branch of engineering in which the professional work has been completed.

The range of such elective studies of a liberal character which the Institute offers to its students is an extended one; and only in one direction does this side of our work seem to need strengthening. We have, unfortunately, no courses of lectures on philosophy, psychology, and ethics; and I would again bring to your attention the desirability of having a professorship of these important subjects established at the Institute, either through a special endowment or through direct provision for the necessary salary payments through a period of years.

A second type of five-year course makes provision for those students who desire to secure a training in two allied branches of science or engineering, as in electrical and mechanical engineering, mechanical and chemical engineering, mining engineering and geology, etc. Such a combination of knowledge and training is so often required in professional practice that the student who has received it has exceptional opportunities open to him. For the completion of such a Course, the degree of Bachelor of Science in two professional departments of study is awarded.

In a third type of five-year course, provision is made for distributing the work of the last three years of the regular four-year courses over four years without additional requirements, thus reducing the number of subjects required in any term. This arrangement affords the opportunity for more thorough work in each subject by enabling a student to devote more time to outside study and to practice in the laboratories, drawing-rooms, and in the field; and it enables regular standing to be maintained by the slow, thoughtful student, who, though able to understand and perform our work satisfactorily, finds it difficult to do it properly at the rate and under the pressure which our four-year schedules involve.

Requirement of Physical Training

Of the more specific changes that have been made in the courses of instruction the most important is the introduction, upon the recommendation of the Dean, of the requirement that all first-year students attend a course of four lectures on personal hygiene, have the usual anthropometric measurements made upon them at the beginning and at the end of the school year, and take regular exercise in the gymnasium classes or upon the athletic teams throughout a large part of the year. A circular prepared for the use of students in regard to this subject has recently been sent to members of the Corporation for their information. The chief purpose of this requirement, which thus far has worked very satisfactorily, is to impress upon students the necessity of close attention to their health and the importance of physical exercise as a means of maintaining it.

Closer Relations Between Instructors and Students

I am glad to be able to state that a gift received from an anonymous friend has made it possible to extend the plan of individual conferences between the instructors in charge of sections and their students, which was last year provided for in the subjects of first-year English and mathematics, to second-year physics, which is one of our most fundamental subjects and one with which students have much difficulty.

The establishment of close personal relations between instructors and students is a matter of prime importance to the success of the work of instruction. Through the fact that an unusual proportion of our subjects are taught upon the recitation plan to small sections or in the laboratory to individuals rather than by formal lectures to large classes, such relations are already developed at the Institute to a greater degree than at most other large educational institutions. The plan of conferences just referred to supplements the recitation system in a most valuable way. I believe, however, that there exists in some of our important first and second year subjects a further opportunity for accomplishing much in this direction through a different organization of the work. Instead of having, as is now done in some cases, a group of instructors teach in common in the laboratory or drawing-room a whole class of from three to four hundred students, while another group carries on the classroom work in the same subject, and perhaps a third group corrects the written work submitted, much better results would, I am sure, be attained by placing each instructor in full charge of a limited number of students, say sixty or eighty, and having him, with the aid of an assist-

ant when necessary, carry on with those students all the different sides of the work in the subject in question (except the course of experimental lectures, which it is especially uneconomical to repeat). He would thus not only get much more closely acquainted with his students and come to understand their individual difficulties, but he would feel a personal responsibility and pride in the success of those intrusted to him. He has, moreover, a greater variety of work, and avoids the monotony of an undue number of repetitions of the same exercise with a large number of sections. Professor A. E. Burton has called attention in his report submitted herewith upon the Department of Drawing and Descriptive Geometry to the importance of making such a change in the method of instruction in these subjects; and it would, I believe, be equally advantageous in such subjects as chemistry and physics, in which the instruction consists of a combination of lecture, recitation, laboratory, and problem work. The present method of giving such instruction to large classes has grown up in the larger colleges as a result of an assumed need of economy in this direction; for there is some economy of effort in the division of labor between the different sides of a teacher's work, and there is a large economy in the average salary paid when one professor is employed to supervise and to give lectures, and inexperienced or otherwise inefficient instructors and assistants are engaged to do the real teaching. From an educational point of view, however, the method is unsatisfactory; until it is abandoned, the problem of handling large classes will not be adequately solved and large colleges will be at a disadvantage in comparison with small ones. Moreover, though the other plan of individual responsibility involves additional expense, the amount required is not inordinate; for the main work of instruction might well be done by men of intermediate grades receiving (according to their length of service) from \$1000 to \$1800 a year. And it would, I believe, be better to curtail expenditures in almost any other direction than in this one, which is so essential to the efficiency of the teaching of our fundamental subjects.

Requirement of Summer Work

In my previous report I called attention to the important advantages which would result from the transfer to a summer period of some of the required work in the field, laboratory, and drawing-room, as well as to some of the difficulties involved. A committee of the Faculty has studied this matter and has prepared for the consideration of the Faculty a plan providing for the requirement of three and one-half weeks of work in the month of June by all students between the first and the second years. The work included in this summer period would consist of surveying in all those Courses of Study which have this subject, of mechanic arts and descriptive geometry in certain other Courses, and of chemical laboratory in certain others. The time set free in the school year it is proposed to utilize for the introduction, not of any new subjects, but of additional recitations and preparation time into the general courses in chemistry, physics, and English composition, literature, and history. For the transfer or surveying to the summer there are strong reasons of a special character which have been fully set forth by Professor Swain in his reports upon the Civil Engineering Department both this year and in previous years. Professor Swain submits in this year's report a detailed plan for a surveying summer camp to which I would call your attention.

New Subjects of Instruction

A few important subjects of instruction are offered to undergraduates as new optional studies for the first time this year. A series of informal talks upon German life and institutions is being given in the German language by Dr. Hermann Schumacher, who has come to the Institute this term from the Royal Gymnasium of Cologne under the auspices of the Carnegie Foundation for the Advancement of Teaching. A course of lectures on Cosmic Physics, presenting the broad aspects of this subject and the recent advances in it, is to be given to our students through the kindness of Professor Percival Lowell. During the present year the instruction in economic geology has been placed under the charge of Dr. Waldemar Lindgren, an eminent expert in that subject from the United States Geological Survey. A new option upon the subject of steam turbine engineering has been introduced into the Course of Mechanical Engineer-

ing upon the initiative and under the direction of Professor C. H. Peabody. In addition, new courses for advanced students are offered in many of the departments.

A New Research Laboratory

Through the liberality of a member of the Corporation it has been possible to make definite provision for the important extension of our advanced instruction and research work to the industrial applications of chemistry. By the establishment at the beginning of this year of the new Research Laboratory of Applied Chemistry as a division of the Chemical Department, special opportunities are offered for the execution, by salaried research assistants and by advanced students, of investigations of chemical problems of interest to the manufacturer. In a report submitted herewith, the Director of the Laboratory, Professor W. H. Walker, describes more fully its present work and its future prospects of development.

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Some important additions have been made during the past summer to our laboratories and equipment.

Greatly needed space has been provided for the Laboratory of Steam Engineering by extending it into the old lunch room in the Pierce Building; and there has been installed in it a 500-kilowatt steam turbine, together with a condenser, pumps, and other accessories.

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In speaking of our buildings and equipment, I must not fail to emphasize the seriously crowded condition of our present quarters, even though it be a time-worn topic of college presidents. I wish specifically to call your attention to the following facts:—our limited space makes impossible any increase in the number of our students; it prevents development of our present work in any new direction, however desirable it may be; it prevents, through lack of classrooms, an extension of the plan of instruction in small sections, which as I have stated is so essential to efficient teaching; it involves (most strikingly in the case of the Chemical Department) a separation of different divisions of the departments, thus hindering a close association of the different instructors and proper correlation of their work; it makes necessary a crowding of students and apparatus in our laboratories which makes thoughtful and reliable work difficult; and it gives no opportunity for providing our instructing staff with adequate offices and private laboratories in which writing, calculations, and in-

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Though the physical condition of the Institute is, as I have indicated, one that makes impossible further growth or a development of its work in new directions, and one that does in some measure impair the efficiency of our present instruction, yet I should be sorry to give you the impression that the latter effect is of a very serious character. On the contrary, there has, I believe, never been a time when our teaching was so thorough or our system of education so generally effective; and this results from the fact that limitation of space is, after all, only a secondary factor in the whole problem. Equipment for lecture and laboratory work is another physical factor of at least equal significance; and on this side the Institute, taken as a whole, is extraordinarily well provided for. Far more important than either of these are, moreover, the character of the teacher, the spirit of the student, and methods of instruction, and the standards of scholarship and ideals of the institution; and in all these respects the Institute is steadily advancing.

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RESOLVED by the student body of this institution that their heartfelt gratitude be extended to the said Committee and all others through whose generosity this important development of student life has been made possible, and be it also

RESOLVED that the students by their use of the Union will at all times demonstrate this appreciation, and be it further

RESOLVED that a copy of these resolutions be sent to the members of the Committee on Student Welfare of the Corporation, and to all other members of the Corporation and Alumni who have contributed funds for the erection and equipment of the Union."

The Union serves the purposes both of a club house and of a general eating place for students. On the first floor there is a large dining room, in which students who desire to do so may get all their meals, both week-days and Sundays; the kitchen being in the adjoining basement of the Pierce Building. On the second floor there is a smaller dining room available for the meeting of student societies; and a large social or living room, where students may gather in their spare time for reading and conversation and where evening entertainments may be held; also a small room known as the quiet room. In the mezzanine part, a coat room and students' post office, a lavatory, and three small rooms for offices for student organizations are provided. In an adjoining room is the office of The Tech, the students' newspaper.

The control of the Union has been placed in charge of a Committee of nine members, of whom a majority are undergraduate students elected by the Institute Committee. There have also been elected by the students three subcommittees to take charge of different sides of the Union's activities, namely, a House Committee, a Dining Room Committee, and an Entertainment Committee. The latter of these committees has arranged for the holding of lectures or musical or other entertainments regularly on every Friday evening.

The Point System

The admirable spirit of our students, manifested not only in connection with this Union, but in many other ways, is, I believe, one which can be matched at few, if any, other colleges. I can not refrain from mentioning to you a striking illustration of this. The Institute Committee has recently recommended, and the student-body put into practice, a plan known as the "point-system," which has been introduced in only one or two other colleges. The purpose of this plan is to restrict the number of different offices in the various student organizations which one individual may hold. To each office a certain number of "points" is attached, and no student can hold positions corresponding to more than a specified maximum of points. This hinders a few aggressive individuals from monopolizing the direction of student activities, whereby their own scholarship is sacrificed and the desirable participation in more moderate measure of a larger number of students is prevented.

The Development of Closer Relations

In order to enable the Institute to fulfill more effectively its educational mission, a determined effort must be made to establish closer relations with and among the different organizations

and groups of individuals that are in any way associated with the work of the Institute. While its success will, of course, depend primarily upon the character of the education it affords and upon the contributions to scientific progress it makes; yet no institution of learning, and least of all a school of applied science, can afford to become in any degree isolated. I believe that insufficient attention to this matter during the past ten years has been a serious obstacle in the way of our progress; and that there is no more important task before us in the immediate future than that of remedying this defect.

First of all, there should be close co-operation between the different groups within the Institute itself, this Corporation, its Executive and other Committees, the Alumni, the Faculty and instructors, and the undergraduates. There should be full discussion of new questions as they arise, not merely by the body which may have the final decision, but by all others who have any natural interest in them. The carrying on of an educational institution is in its very essence a co-operative undertaking; and full publicity and free discussion of its affairs is one of the prime conditions of its success.

As suggested in my previous report, members of this Corporation can, I believe, render great assistance to the Institute through a more direct participation in its work. This may be done in the case of such matters as specific improvements in the courses and methods of instruction, in the conditions of student life, in the equipment of the departments—in the case of any special matter in which a member may take a personal interest—through individual co-operation with the President, Dean, and professors in charge of departments. For the consideration of larger questions, the appointment of special committees seems the best method, members of the Faculty or Alumni who are especially interested in the matter under consideration being invited to attend. The Committee on the Promotion of Welfare of Students appointed by the Corporation at the March meeting has furnished a striking illustration of the effectiveness of this plan. To the interest and activity of that Committee, which had the benefit of the co-operation of the Dean, Bursar, and representatives of the alumni and student body, the establishment of the Technology Union is, as I have already stated, largely due.

It is also important that close relations be maintained between the students and the administrative officers of the Corporation and Faculty, so that the former's needs and interests may be well understood, their points of view appreciated, and their co-operation in promoting the aims of the Institute secured. Few greater mistakes could be made than that of failing to enlist the direct interest and support of the students in the solution of the general and educational problems which confront us. This has been made easier through the reorganization during the past year of the Institute Committee, by which it is made thoroughly representative of the student-body, as well as by the closer contact between students and administrative officers which the Technology Union has brought about. The President and Dean have also been greatly aided on this side by the appointment made last year by the Executive Committee of Mr. H. A. Rapelye of the class of 1908 to the new position of President's Assistant. His intimate knowledge of our student life has enabled him to advise and assist us effectively in many ways. He has among other things taken an important part in the arrangements connected with the new Technology Union, and is now organizing a Student Employment Office, through which this important work may be more effectively handled.

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The Alumni

The relations of the alumni to the Institute have during the past ten years grown much closer and more effective; and the present year is to be an especially important one in this respect. There is to be held in Boston next June the Quinquennial Reunion of all Technology Alumni. There is to be issued under the auspices of the Reunion Committee and the Institute the first complete register of former students, including non-graduates as well as graduates, and thus identifying the former more closely with the Institute. The Alumni Association is about to be reorganized through the formation of an Alumni Council of about sixty members so chosen as to be thoroughly representative of the whole body. This Council will form a responsible body whose advice and co-operation may properly be invited by the President and Corporation in connection with many of the problems of development.

For fostering and extending the relations with the former students of the Institute no opportunity should be lost; for upon their feeling towards it depends in large measure its success. Their attitude determines its reputation throughout the country; their influence is directly or indirectly the source of most of its students. Their enthusiasm stimulates its officers and professors to greater efforts; and their aid in securing financial support is essential to its development. Our Alumni Association is most active in keeping our former students informed in regard to the Institute, and in maintaining their interest in its welfare; but the Institute authorities must also co-operate in this undertaking. Among other things, the administrative officers or other deputed members of the Corporation and Faculty should visit periodically the various alumni associations throughout the country. Dean Burton has just returned from a trip of this kind to the Pacific Coast, where he took part in the organization of two new Technology associations, in Seattle, Washington, and Portland, Oregon, respectively.

The Secondary Schools

The relations of the Institute to the secondary schools deserve constant attention. With those schools the Institute has always kept closely in touch with reference to its entrance requirements, taking care not to make them so excessive as to discourage the pupils from the city high schools, whom by reason of their ability we wish to attract, or so uneven as to distort the curricula of those schools. Any addition to our requirements should, I believe, be of an alternative character, so that they may be adapted to the different preparation afforded by the various types of high schools which are constantly becoming more diversified. It is, for example, desirable that it be made easier for graduates of Latin high schools to enter the Institute.

But there is another direction in which the relations of the Institute and of other scientific schools to the secondary schools need to be cultivated. Owing to the fact that by far the larger number of teachers in the high schools have received an academic rather than a scientific training, owing to the undue development in this section of the country of the sentiment that a more effective education is secured under the collegiate plan than under that followed by even the best scientific schools, and owing to the failure to appreciate that the social and physical sides of student-life are developed at the Institute upon a sounder basis and in better proportioned measure than at most of the colleges, the advantages of our system of education and the opportunities afforded by the scientific professions in general are not sufficiently understood by boys in the preparatory schools nor by their teachers and parents. There is, therefore, a need in this community of better informing the public in regard to this matter,—not so much because the interests of the Institute are involved, as because it is important that both types of educational effort be duly appreciated. It is to be hoped that individual members of our instructing staff will avail themselves of any opportunities that occur for the presentation of these considerations to the teachers and pupils of the secondary schools; also that the Faculty Committee on the Relations with Secondary Schools consider what can be done in this direction. There is, however, no part of the Institute organization which

can accomplish so much on this side as our student-body, the individuals of which can readily maintain close relations with the special schools from which they have come.

The Public

There are also important relations to be maintained with the general public. The public should be kept informed, through the press, and otherwise, of the activities of the Institute; and all those industrial, commercial, and transportation interests which are in any measure dependent on scientific knowledge and investigation should be made to feel that the Institute stands ready to place at their service for the study of their problems the expert advice of its staff and its laboratory facilities; and in the further development of those facilities, through the establishment of research laboratories of applied science and of engineering testing stations and through the installation of the elaborate testing machines and other scientific instruments needed for investigation purposes, the co-operation of the manufacturers of this community should be secured.

The Society of Arts, the oldest part of our organization, has for its primary function the general dissemination of scientific knowledge and especially with reference to the recent advances and practical applications of the sciences; but it also furnishes incidentally a means of making the work of the Institute known to the public. I am glad to be able to tell you that as a result of the earnest efforts of its Executive Committee, new life has been infused into that Society and an unusually valuable and attractive program has been arranged for the meetings of the present year.

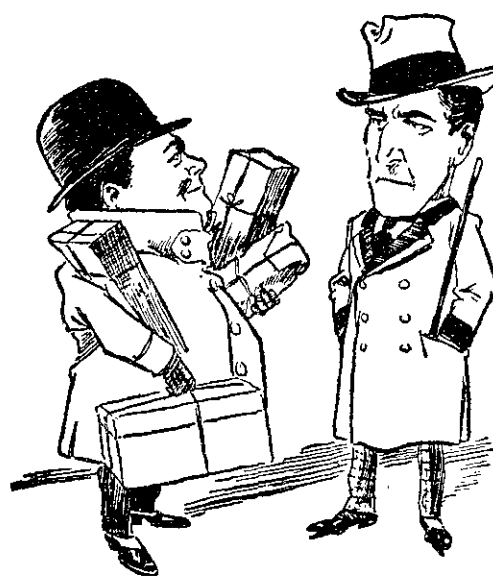
The State

With the State the Institute naturally stands in intimate relations. It bears its name, is located in its capital city, and it received from it its charter and the plot of ground on which its older buildings are located. Three representatives of the State sit upon its governing board. Forty free scholarships are maintained, available for applicants from the various senatorial districts. Finally for a number of years financial aid has been received from the Commonwealth. Without sacrificing its national scope or its own independence, it should therefore constantly strive to serve the State in every possible way—in the development of its natural resources, the improvement of its industrial processes and its transportation facilities, and especially in the solution of its educational problems. In all these respects, it should stand to the Commonwealth much in the same relation as do the progressive State Universities of the Middle West.

As an aid to the officers of the Institute in promoting closer affiliations in these and other directions, the Institute has been fortunate in securing the services of Mr. I. W. Litchfield, one of our former students who has long shown a deep interest in the Institute and an energetic and intelligent co-operation in its work. Since the beginning of his official connection with the Institute last September, he has taken an important part in the successful starting of the Technology Union, in the development of the Society of Arts, in the co-ordination of the work of the student press reporters, and in other matters relating to the public sides of the Institute's work.

It will, of course, be appreciated that, though it is the function of the President to be in touch with all the various organizations and interests that have been mentioned, and though he must often take the lead in extending the relations between them and the Institute, yet he can perform, even with the assistance of the other administrative officers, only a trifling part of all that needs to be done in these directions. In closing this report, I would therefore emphasize, as the watchwords of our future progress, the ideas of co-operation and closer relationships. If there be also shown an implicit confidence in the soundness of our educational system and in its support by the community, its proper growth and development will be assured.

The monthly meeting of the American Institute of Electrical Engineers will be held on Wednesday evening, at 39 Boylston Street.



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RECEPTION

The members of the parish of the Church of the Messiah request the presence of all students of the Institute of Technology at their second monthly reception for the students of Boston, at the parish house, 81 St. Stephen St., Monday, Dec. 14, at 8.00 P.M.

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NOTICES

BATTALION OFFICERS—There will
be a meeting of the officers of the Bat-
talion Tuesday at 1 o'clock in Room A.
in the Union. All officers are requested
to attend as the meeting is of the great-
est importance.

Nominations for sophomore baseball
close at the cage at 12 o'clock on Sat-
urday, Dec. 19, with C. F. Hobson.

A meeting of the Athletic Association
will be held in 11 Pierce, Wednesday
at 4:15 P. M., to discuss baseball.

FACULTY NOTICES

A general convocation will be held
in Huntington Hall, Tuesday, Dec. 15,
at 4 o'clock. Prof. R. C. MacLaurin,
president-elect of the Institute, will ad-
dress the meeting. All 4 o'clock exer-
cises will be omitted.

The class repeating first year Eng-
lish will not meet on Tuesday, but on
Thursday.

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JEWS TO FORM SOCIETY

With L. S. Gordon 1909, as chairman,
twenty men met Friday to consider the
 advisability of forming a chapter of
the Theta Zeta Tau, a national fra-
ternity of Jews having chapters at Har-
vard, Yale, Brown, Columbia, and sev-
eral other colleges. The matter was
finally laid on the table as too complex
for immediate solution, and a motion
passed to form a Jewish club for the
social advancement of Jewish men at
the Institute. The following committee
is at work on the project, and results
are expected soon:—Chairman L. S.
Gordon 1909, H. Schaffer 1909, M. R.
Sharff 1909, S. K. Cohen 1910, and A.
Kaufman 1911.

HARTMAN TO Y.M.C.A.

Emphasizing the idea that "a man is
not a whole man unless he has inter-
ests and activities outside of his busi-
ness," Mr. Hartman, secretary of the
Massachusetts Civic League, gave a very
interesting talk to the Y. M. C. A. last
evening. Mr. Hartman is himself a
college man and frequently speaks to
college men about the spiritual side of
life.

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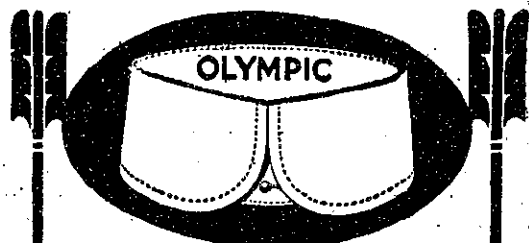
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